

Application No. 10/566,326
Paper Dated: February 25, 2009
In Reply to USPTO Correspondence of November 26, 2008
Attorney Docket No. 4344-060126

REMARKS

The Office Action of November 26, 2008 has been reviewed and the Examiner's comments carefully considered. Claims 3-8 and 21-32 have been cancelled herewith. New claims 33-39 have been added to the application via the present Amendment in accordance with the specification as originally filed. No new matter has been added. Accordingly, claims 33-39 are currently pending in this application, and claims 33 and 34 are in independent form.

Claim Informalities

Claims 27-30 are objected to because the botanical names contained therein should be italicized or underlined. Claims 27-30 are cancelled herewith. As such, these claim objections are now moot. However, new claim 38 properly contains the italicized word "*Bryopsida*".

35 U.S.C. §112 Rejections

Claims 3-8 and 21-32 stand rejected under 35 U.S.C. §112, second paragraph, for indefiniteness. Claims 3-8 and 21-32 are cancelled herewith. As such, these claim rejections are now moot.

35 U.S.C. §103 Rejections

Claims 3, 21, 23, 25, 27, 29 and 31 stand rejected under 35 U.S.C. §103(a) for asserted obviousness over U.S. Patent No. 5,476,523 to Hiraoka et al., (hereinafter "Hiraoka") in view of Calie et al. (Plant Molecular Biology Reporter (1987) vol. 4 no. 4, pp. 206-211) (hereinafter "Calie") in light of Collier et al. (Journal of Tissue Culture Methods (1982) vol. 7, no. 1, pp. 19-22) (hereinafter "Collier"). Claim 4 remains rejected and claims 22, 24, 26, 28, 30 and 32 stand rejected under 35 U.S.C. §103(a) for asserted obviousness over Hiraoka in view of previously cited Meyer (American Journal of Botany, 1940; 27(4): 221-225). Claims 3 and 5 stand rejected under 35 U.S.C. §103(a) for asserted obviousness over Hiraoka in view of Calie in light of Collier, and further in view of previously cited Sabovljevic et al. (Turk. J. Bot. 27 (2003) 441-446) (hereinafter "Sabovljevic"). Claims 4 and 6 stand rejected under 35 U.S.C. §103(a) for asserted obviousness over Hiraoka in view of Meyer, and further in view of Sabovljevic. Claims 3 and 7 are rejected under 35 U.S.C. §103(a) for asserted obviousness over Hiraoka in view of Calie in light of Collier, and further in view of previously cited Virtanen et al. (Plant Ecology, vol. 151, 2000, pages 129-141) (hereinafter "Virtanen"). Claims 4 and 8 are rejected under 35 U.S.C. §103(a) for asserted

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obviousness over Hiraoka in view of Meyer, and further in view of Virtanen. All of the foregoing rejections are now moot in view of the cancellation of claims 3-8 and 21-32.

New claims 33-39 are submitted herewith. It is believed that these claims define over the prior art of record because the present invention relates to the breeding of regeneration buds (lateral buds) and the method for breeding and growing the regeneration buds around the moss gametophytes without limitations to a certain direction. Since the present method is suited for mass production, the method is applied to “a plurality of gametophytes,” and further generates “a plurality of regeneration buds” in the single body of the gametophytes.

The Examiner agrees that Hiraoka does not teach that the leafy gametophytes of moss are stirred by bubbling via the pumping of a gaseous body, including oxygen, to let it into the solution. Calie discloses a method of culturing moss in nutrient medium with aeration by bubbling 2% CO₂ enriched atmosphere (p. 207). However, this is different from the method of bubbling via the pumping of air of the present invention, as recited in the present claim 33. This is an important distinction because the plurality of regeneration buds with breeding directionality are bred around the moss gametophytes, depending on a higher oxygen concentration than carbon dioxide in contact with the gametophytes. Furthermore, in the method, as set forth in the present claim 33, while the plurality of gametophytes suspended in the nutrient solution are actually stirred, neither Hiraoka nor Calie teaches this limitation. Calie only teaches a method for stirring by bubbling via pumping; therefore, it seems that the gametophytes are fixed.

The Examiner also agrees that Hiraoka does not teach that the leafy gametophytes of moss are stirred by bubbling via the pumping of a gaseous body, including oxygen, to let it into the solution. The Examiner submits that Meyer teaches a method of developing leafy gametophytes of *Physcomitrium turbinatum* (Urn Moss) in liquid media. However, Meyer discloses the culture of protonemata, not the production of young moss seedlings, as taught by the present invention. While Meyer describes the culture of protonemata in the early stage, the present invention covers the production of young moss seedlings in the late stage. New independent claims 33 and 34 have been amended to add the wording of “obtained by cutting” to further clarify this difference between Meyer and the present invention.

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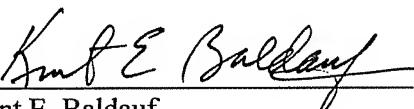
Also, in the present invention, the plurality of gametophytes are in the state of being suspended in the nutrient solution, and such plurality of gametophytes is stirred by bubbling air. Thus, the Examiner's assertion that "by stirring the culture frequently, the protonemal threads would not stick to the bottom or sides of the flask" conversely suggests a meaning that the protonemal threads would stick to the bottom or sides of the flask without rotating the culture frequently. This indicates that the gametophytes of Meyer are not in a suspended state.

In the method of the present invention, the gametophytes suspended in the nutrient solution are stirred and, by this stirring, light can be emitted to the gametophytes from 360 degrees of direction. This can be realized because the gametophytes are in suspension during the stirring state. This is different from any stirring of Meyer because such stirring occurs so the protonemal threads would not stick to the bottom or sides of the flask, and the filaments in the flask would not float to the top of the surface.

Further, the presently claimed invention relates to the method of breeding a plurality of regeneration buds with breeding directionality around the gametophytes without limiting a certain direction of their growth. The teachings of the prior art do not teach or suggest such a method.

Based on the foregoing remarks, the entry of and allowance of claims 33-39 are respectfully requested.

Respectfully submitted,
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